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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, CHRISTOPHER E

ART UNIT	PAPER NUMBER
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2112

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/636,171

Applicant(s)

WHITEMAN ET AL.

Examiner

Christopher E. Lee

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/7/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Receipt Acknowledgement

1. Receipt is acknowledged of the Preliminary Amendment filed on 5th of December 2003. No claim has been amended; no claim has been canceled; and no claim has been newly added. Currently, claims 1-
5 22 are pending in this application.

Claim Objections

2. Claims 7, 13-15, 17, 18 and 20-22 are objected to because of the following informalities:

In the claims 7 and 20, substitute “fewer lines ~~that~~ the primary bus” in line 2 by --fewer lines ~~than~~ the primary bus--, respectively.

10 In the claim 18, substitute “~~an~~ light indicating device” in line 2 by -- a light indicating device--.

According to the claim dependency of the claims 13-15 and 17, each one of the claims dependent claim of the claim 11. However, the previous claim 11 is not related with the subject matter “the method”, but related with the subject matter “the computer system”. Thus, the claims 13-15 and 17 fail to further limit the subject matter of a previous claim 11. The Examiner presumes the claims 13-15 and 17 are
15 respectively dependent claims of the claim 12 in light of the specification, and for the purpose of the claim rejections based on a prior art.

According to the claim dependency of the claims 20-22, each one of the claims is dependent claim of the claim 16. However, the previous claim 16 is not related with the subject matter “the computer system”, but related with the subject matter “the method”. Thus, the claims 20-22 fail to further limit the
20 subject matter of a previous claim 16. The Examiner presumes the claims 20-22 are respectively dependent claims of the claim 19 in light of the specification, and for the purpose of the claim rejections based on a prior art.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5 4. Claim 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim 1 recites the limitation "the status of the storage device" in line 7. There is insufficient antecedent basis for this limitation in the claim. Therefore, the term "the status of the storage device"

10 could be considered as --a status of the storage device-- since it is not clearly defined in the claims.

The claims 2-11 are dependent claims of the claim 1.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

15 A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1-5, 7, 8, 10, 12-15, 17-20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated
20 by Corrington et al. [US 6,076,142 A; hereinafter Corrington].

Referring to claim 1, Corrington discloses a computer system (i.e., RAID system 10 in Fig. 1), comprising:

- a storage controller (i.e., RAID controller 24 of Fig. 2);
- a storage device (i.e., hot swappable drive module 14 in Fig. 2) coupled via a primary bus (i.e.,
25 SCSI bus 13 of Fig. 2) to said storage controller (See col. 13, lines 8-17);
- a backplane controller (i.e., ICU 22 of Fig. 2) coupled via a secondary bus (i.e., connections of ML6692 266 for RAID controller interface, and of ML2258 282 for Backplane interface in Fig.

26) to said storage controller (i.e., connection line for RAID controller interface VT100/RTS; See col. 11, line 61 through col. 12, line 13);

- a status indicator (i.e., LEDs 41-46, 54 and audio alarm in Fig. 5; See col. 9, lines 23-29), responsive to information (e.g., drive module failure and temperature of RAID system) received from said backplane controller to indicate a status of said storage device (See col. 8, line 43 through col. 10, line 26); and wherein
 - said information (i.e., drive module failure and temperature of RAID system) conveyed to said status indicator (i.e., to said Drive LED and TEMP alarm LED) is conveyed via said secondary bus (i.e., via A/D ML2258 286 of Fig. 26; See col. 9, lines 49-67, and col. 12, lines 10-11).

Referring to claim 2, Corrington teaches

- said information (i.e., drive module failure and temperature of RAID system) conveyed to said status indicator (i.e., to Drive LED 50 and TEMP alarm LED 41 of Fig. 5) is not conveyed via said primary bus (i.e., not conveyed via said SCSI bus 13 of Fig. 2, but via said A/D ML2258 286 of Fig. 26).

Referring to claim 3, Corrington teaches

- said status indicator (i.e., LEDs 41-46, 54 and audio alarm in Fig. 5) including a light indicating device (i.e., Light Emitting Diode^{cf. Def.}).

Referring to claim 4, Corrington teaches

^{cf. Def.} "LED" is defined as "a semiconductor diode that emits light when a voltage is applied to it and that is used in an electronic display" by Merriam-Webster's Collegiate[®] Dictionary (10th ed.)

- said status indicator (i.e., LEDs 41-46, 54 and audio alarm in Fig. 5) including audible indicator (See col. 2, lines 30-34 and col. 9, lines 61-63).

Referring to claim 5, Corrington teaches

- 5 • said primary bus (i.e., SCSI bus 13 of Fig. 2) is a small computer system interconnect ("SCSI") bus (See col. 2, lines 15-26).

Referring to claim 7, Corrington teaches

- 10 • said secondary bus (i.e., said connections of ML6692^{cf. ML6692} 266 for RAID controller interface, and of ML2258 282 for Backplane interface in Fig. 26, in fact, Rx/D/TxD 14 lines for ML6692 and Analog/Digital 16 lines for ML2258^{cf. ML2258}) having substantially fewer lines than said primary bus (i.e., 50 or 68 lines of said SCSI bus^{cf. SCSI} 13 of Fig. 2).

Referring to claim 8, Corrington teaches

- 15 • said status indicator (i.e., TEMP alarm LED 41 in Fig. 5) is operable at different frequencies^{cf. Def.} (i.e., a number of LED blinking times, and a steady LED illumination meaning 0 number of LED blinking time; See col. 9, lines 61-62, and 66-67) and
- 20 • each frequency relates to a different status condition (i.e., the LED blinking when the temperature reaches the first level threshold, and the steady LED on when the temperature reaches the second level threshold) of said storage device; See col. 9, lines 59-67).

^{cf. ML6692} Refer to specification "100BASE-TX Physical Layer with MII", published by Micro Linear, April 1999

^{cf. ML2258} Refer to specification "Micro Linear μ P Compatible 8-Bit A/D Converter with 8-Channel Multiplexer", published by Micro Linear, May 1997

^{cf. SCSI} SCSI standard A-type cable has 50 lines, and SCSI standard B-type cable has 68 lines. See "Information technology - Small Computer System Interface -2" Working Draft, on page 9. 5.2.1 Single-ended cable.

^{cf. Def.} "frequency" is defined as "the number of times that a periodic function repeats the same sequence of values during a unit of variation of the independent variable" by Merriam-Webster's Collegiate[®] Dictionary (10th ed.)

Referring to claim 10, Corrington teaches

- said computer system (i.e., RAID system 10 in Fig. 1) is rack mounted (See housing 11 with 7 bays, drive modules 14A-G, channel 30 and guide track 31 in Fig. 1, and col. 6, lines 52-63) and
- 5 • said storage device (i.e., hot swappable drive module 14 in Fig. 2) is capable of being hot swapped (See col. 5, lines 11-14).

Referring to claim 12, Corrington discloses a method (i.e., monitoring RAID system by Monitor Utility; See Abstract and col. 5, lines 60-67), comprising:

- 10 • detecting a change in a storage device status (i.e., monitoring drive module being powering up or down, and drive module failure; See col. 5, lines 37-43) via a primary bus (i.e., said Monitor Utility being run in said RAID system clearly anticipates said detecting a change in a storage device status via SCSI bus 13 in Fig. 2), wherein
 - 15 ○ the storage device (i.e., hot swappable drive module 14 in Fig. 2, which is showing said storage device status and monitored by said Monitor Utility) communicates with a storage controller (i.e., RAID controller 24 of Fig. 2);
- indicating storage device status (i.e., module powered up and ready for use, or drive module failure) via a secondary bus (i.e., connections of ML6692 266 for RAID controller interface, and of ML2258 282 for Backplane interface in Fig. 26), wherein
 - 20 ○ said storage controller (i.e., said RAID controller) communicates with a backplane controller (i.e., ICU 22 of Fig. 2; See col. 5, lines 37-39); and
 - enabling status indicators (i.e., LEDs 41-46, 50, 54 in Fig. 5) to reflect the status of said storage device (See col. 8, line 43 through col. 10, line 26), wherein

- said backplane controller (i.e., said ICU) communicates with said status indicators (i.e., with said Drive LED and TEMP alarm LED) via said secondary bus (i.e., via A/D ML2258 286 of Fig. 26; See col. 9, lines 49-67, and col. 12, lines 10-11).

5

Referring to claim 13, Corrington teaches

- said change in status is an insertion of a new storage device (i.e., hot swappable drive module 14 having been inserted into said RAID system in Fig. 2; See col. 7, lines 17-20, and col. 9, lines 1-4).

10

Referring to claim 14, Corrington teaches

- said change in status is the failure of a storage device (i.e., drive module failure; See col. 9, lines 38-40).

15

Referring to claim 15, Corrington teaches

- said primary bus (i.e., SCSI bus 13 of Fig. 2) is a small computer system interconnect ("SCSI") bus (See col. 2, lines 15-26).

Referring to claim 17, Corrington teaches

- said secondary bus (i.e., said connections of ML6692^{cf ML6692} 266 for RAID controller interface, and of ML2258 282 for Backplane interface in Fig. 26, in fact, Rx/D/TxD 14 lines for ML6692

20

^{cf ML6692} Refer to specification "100BASE-TX Physical Layer with MII", published by Micro Linear, April 1999

and Analog/Digital 16 lines for ML2258^{cf. ML2258}) comprising substantially fewer lines than said primary bus (i.e., 50 or 68 lines of said SCSI bus^{cf. SCSI} 13 of Fig. 2).

Referring to claim 18, Corrington teaches

- 5 • said status indicator (i.e., LEDs 41-46, 54 and audio alarm in Fig. 5) is a light indicating device (i.e., Light Emitting Diode^{cf. Def.}).

Referring to claim 19, Corrington discloses a computer system (i.e., RAID system 10 in Fig. 1), comprising:

- 10 • a storing means for storing information (i.e., hot swappable drive module 14 in Fig. 2);
- a first controlling means for controlling said storing means (i.e., RAID controller 24 of Fig. 2), wherein
- said storing means and said first controlling means are coupled via a primary bus (i.e., SCSI bus 13 of Fig. 2; See col. 13, lines 8-17);
- 15 • a secondary controlling means (i.e., ICU 22 of Fig. 2) coupled via a secondary bus (i.e., connections of ML6692 266 for RAID controller interface, and of ML2258 282 for Backplane interface in Fig. 26) to said first controlling means (i.e., said RAID controller; See col. 5, lines 37-39);
- a status indicating means (i.e., LEDs 41-46, 50, 54 in Fig. 5) that receives status information (e.g.,
- 20 module powered up and ready for use, or drive module failure) from said secondary controlling means (i.e., said ICU), wherein

^{cf. ML2258} Refer to specification "Micro Linear μ P Compatible 8-Bit A/D Converter with 8-Channel Multiplexer", published by Micro Linear, May 1997

^{cf. SCSI} SCSI standard A-type cable has 50 lines, and SCSI standard B-type cable has 68 lines. See "Information technology - Small Computer System Interface -2" Working Draft, on page 9, 5.2.1 Single-ended cable.

- o said received information indicates the status of storage means (See col. 8, line 43 through col. 10, line 26); and wherein
 - said information (i.e., drive module failure and temperature of RAID system) conveyed to said status indicator (i.e., to said Drive LED and TEMP alarm LED) is conveyed via said secondary bus (i.e., via A/D ML2258 286 of Fig. 26; See col. 9, lines 49-67, and col. 12, lines 10-11).

Referring to claim 20, Corrington teaches

- said secondary bus (i.e., said connections of ML6692^{cf ML6692} 266 for RAID controller interface, and of ML2258 282 for Backplane interface in Fig. 26, in fact, Rx/D/TxD 14 lines for ML6692 and Analog/Digital 16 lines for ML2258^{cf. ML2258}) comprises fewer lines than said primary bus (i.e., 50 or 68 lines of said SCSI bus^{cf. SCSI} 13 of Fig. 2).

Referring to claim 21, Corrington teaches

- said status indication means (i.e., DRIVE LED 50 of Fig. 5) indicates that said storing means (i.e., hot swappable drive module 14 in Fig. 2) has been inserted into said system (See col. 7, lines 17-20, and col. 9, lines 1-4).

Referring to claim 22, Corrington teaches

- said status information (i.e., drive module failure) indicating failure of said storing means (See col. 9, lines 38-40).

^{cf. Def} "LED" is defined as "a semiconductor diode that emits light when a voltage is applied to it and that is used in an electronic display" by Merriam-Webster's Collegiate[®] Dictionary (10th ed.)

^{cf ML6692} Refer to specification "100BASE-TX Physical Layer with MII", published by Micro Linear, April 1999

^{cf ML2258} Refer to specification "Micro Linear μ P Compatible 8-Bit A/D Converter with 8-Channel Multiplexer", published by Micro Linear, May 1997

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10 8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15 9. Claims 6, 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corrington [US 6,076,142 A] as applied to claims 1-5, 7, 8, 10, 12-15, 17-20 and 22 above, and further in view of 20 Berglund et al. [US 6,199,130 B1; hereinafter Berglund].

Referring to claims 6 and 16, Corrington discloses all the limitations of the claims 6 and 16, respectively, except that does not teach that said secondary bus is an I²C bus.

Berglund discloses a system power control network connection (See Fig. 1 and col. 4, lines 63-67), wherein

- 25
- a storage device (i.e., DASD in Fig. 4) coupled via a primary bus (i.e., SCSI bus 408 of Fig. 4) to a storage controller (i.e., IOP 402P and IOA 402A in Fig. 4); and

cf. SCSI SCSI standard A-type cable has 50 lines, and SCSI standard B-type cable has 68 lines. See "Information technology - Small Computer System Interface -2" Working Draft, on page 9, 5.2.1 Single-ended cable.

- a backplane controller (i.e., SPCN 102 of Fig. 4) coupled via a secondary bus (i.e., IIC 104 of Fig. 4) to said storage controller (i.e., said SPCN being coupled to DASD via interfacing elements including PCIB SPCN RAM 103M, PCIB 103, and PCI bus 401 and its slots in Fig. 4); and further comprising

- 5 o said secondary bus (i.e., said IIC) is an I²C bus (See col. 4, lines 15-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted said system power control network (i.e., SPCN) connection, as disclosed by Berglund, for said secondary bus (i.e., plural interface connections), as disclosed by Corrington, for the advantage of providing a simple and effective way (i.e., a simple two-wire point-to-point IIC interface) of
10 accomplishing the implementation of the concurrent maintenance of said storage devices (i.e., PCI based direct access storage devices; See Berglund, col. 5, lines 27-42).

Referring to claim 9. Corrington teaches

- said status information (i.e., drive module failure) indicating storage device failure (See col. 9,
15 lines 38-40).

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Corrington [US 6,076,142 A] as applied to claims 1-5, 7, 8, 10, 12-15, 17-20 and 22 above, and further in view of Garnett et al. [US 6,869,314 B2; hereinafter Garnett].

20 *Referring to claim 11,* Corrington discloses all the limitations of the claim 11, except that does not teach that said storage device comprising a blade server.

Garnett discloses a rack system (See Fig. 2, and col. 4, lines 28-31), wherein

- a storage device (i.e., information processing cartridge 43, in fact, said cartridge having a hard disk 205 in Fig. 11) comprising a blade server (See col. 4, lines 53-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented said storage device (i.e., hot swappable drive module), as disclosed by

5 Corrington, in the type of said blade server, as disclosed by Garnett, so as to receive server blades of a high density computer system (i.e., server), and thus this is of particular in increasing reliability, ease of manufacture, ease of maintenance, and reducing costs (See Garnett, col. 32, lines 35-39).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10 Berglund et al. [US 6,044,411 A] disclose method and apparatus for correlating computer system device physical location with logical address.

Lawrence et al. [US 6,867,701 B2] disclose computer-server rack enclosure fault light diagnostic system.

Zandy et al. [US 6,460,104 B1] disclose SCSI connector.

15 "ML 6692 100BASE-TX Physical Layer with MII" published by Micro Linear, April 1999.

"ML 2258 μ P Compatible 8-bit A/D Converter with 8-Channel Multiplexer" published by Micro Linear, May 1997.

"Information technology - Small Computer System Interface -2" Working Draft, on page 9, 5.2.1 Single-ended cable.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher E. Lee whose telephone number is 571-272-3637. The examiner can normally be reached on 9:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application
5 Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Christopher E. Lee
Examiner
Art Unit 2112

CEL/ *CEL*

Christopher E. Lee